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Indian Standard

SPECIFICATION FOR CAST VERTICAL
BOLLARDS WITH AND WITHOUT LUGS

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR CAST VERTICAL BOLLARDS WITH AND WITHOUT LUGS

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Indian Standard

SPECIFICATION FOR CAST VERTICAL BOLLARDS WITH AND WITHOUT LUGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 18 December 1965, after the draft finalized by the Marine Engineering and Shipbuilding Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Bollards form a part of the mooring outfit required on board ships. The nominal size of cast bollards for the ship is based on the admissible breaking load of ropes specified by the competent authority under whose rules the vessel is constructed. Cast vertical bollards are required to be provided with lugs when they are fitted in certain positions on board ships. Bollards fitted in other positions may or may not be provided with lugs depending upon owner's requirements.

0.3 This standard is based on ISO/R 38 'Bollards (vertical type) with and without lugs', issued by International Organization for Standardization.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the material and dimensions for cast vertical bollards with and without lugs.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definition shall apply.

2.1 Nominal Diameter — The nominal diameter of bollards is the outside diameter of the bollard barrel in millimetres.

*Rules for rounding off numerical values (revised).

3. MATERIAL

3.1 Cast bollards shall either be made of cast iron or cast steel. Iron castings shall conform to Grade 25 of IS : 210-1962* and steel castings shall conform to IS : 2985-1964†. When materials other than these two are used, the thickness shall be changed accordingly.

4. DIMENSIONS

4.1 The shape and dimensions of cast iron and cast steel bollards shall be as given in Fig. 1 (*see* P 6) and 2 (*see* P 9) and Tables 1 and 2 (*see* P 7) respectively.

4.2 The radii of fillets not shown in the tables shall be as large as possible and shall in no case be less than the thickness of adjacent material.

5. TOLERANCES

5.1 The height H_1 may exceed the value given in the tables by 50 mm maximum, unless otherwise stated by the purchaser.

5.2 The thickness of the material in no case shall be less than the specified value.

5.3 The tolerances on all other dimensions shall be according to the coarse series as given in IS : 2102-1962‡.

5.4 The finished weight of the cast bollard shall be not less than the calculated weight shown in Tables 1 and 2.

6. FINISH

6.1 The surface of the bollard shall be finished smooth.

7. DESIGNATION

7.1 Cast vertical bollards shall be designated by its name, nominal diameter, material and number of this standard.

Example :

Cast vertical bollards having a nominal diameter 150 mm, made of cast iron shall be designated as:

Cast Vertical Bollards 150 CI IS : 3381

*Specification for grey iron castings (*revised*).

†Specification for steel castings for ship's structure.

‡Recommendations for machining deviations for dimensions without specified tolerances.

8. MARKING

8.1 Cast vertical bollards shall be marked with nominal diameter and manufacturer's other identification marks.

8.2 The cast vertical bollards may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

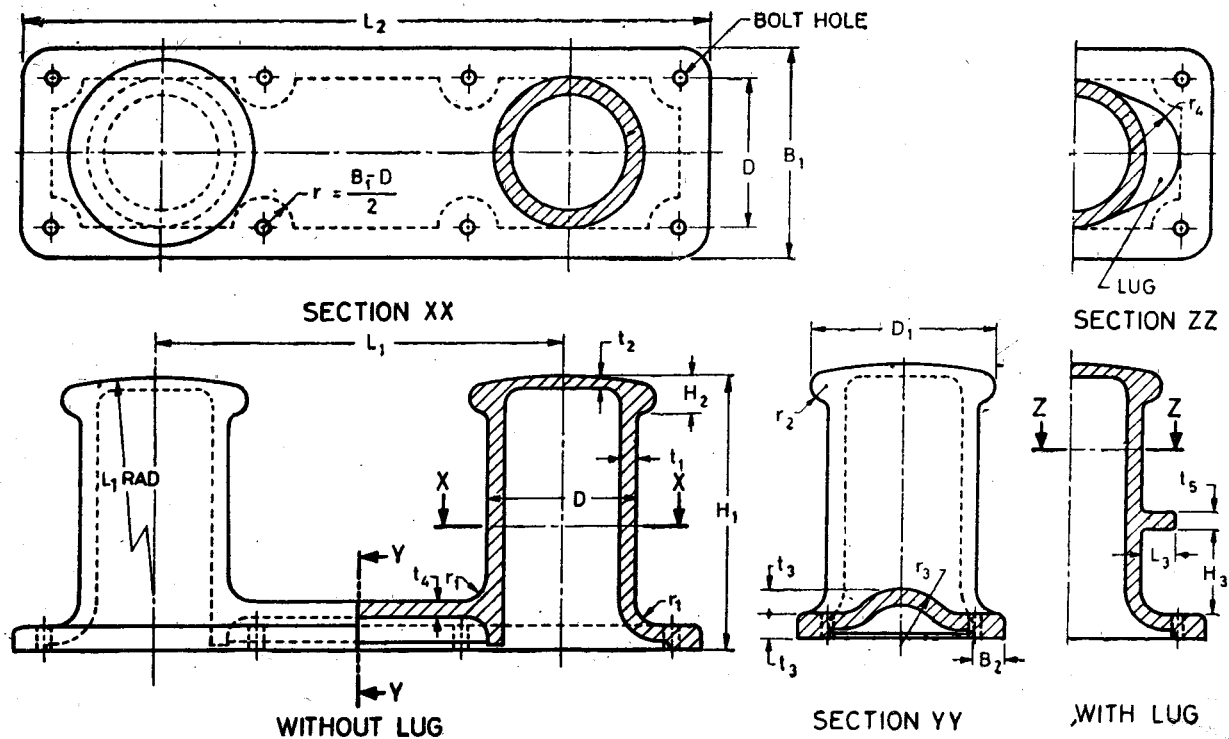


FIG. 1 DIMENSIONS FOR CAST VERTICAL BOLLARDS WITH AND WITHOUT LUGS

TABLE 1 DIMENSIONS FOR CAST IRON BOLLARDS

(Clauses 4.1, 5.4, and Fig. 1 and 2)

All dimensions in millimetres.

NOMI- NAL DIA D	*F tonnes	CALCU- LATED WEIGHT (WITH- OUT LUGS) (kg)	BARREL								BASE						FIXING ARRANGEMENT					LUG			
			D ₁	H ₁	L ₁	H ₂	r ₁ Min	t ₁	t ₂	r ₂ Min	L ₂	B ₁	t ₃	r ₂ Min	t ₄	B ₂	No. of Bolts	Bolt Dia	Hole Dia	P ₁	P ₂	L ₃	H ₃	t ₅	r ₄ Min
75	3.5	22	100	170	275	20	18	20	13	10	500	145	25	40	20	25	6	M14	16	150	130	—	—	—	—
100	5.0	36	135	220	350	25	20	22	15	13	600	170	30	50	22	27	6	M14	16	190	150	—	—	—	—
125	8.0	67	170	275	430	32	25	25	17	16	700	200	35	50	25	30	6	M20	22	230	165	—	—	—	—
150	12.0	100	200	330	500	38	30	27	19	20	800	230	40	60	27	35	6	M22	24	270	180	—	—	—	—
175	16.0	138	230	375	550	45	35	30	21	22	900	270	45	60	30	40	6	M24	26	300	205	—	—	—	—
200	20	200	260	420	600	52	40	32	23	24	1 000	300	50	75	32	45	8	M24	26	330	240	—	—	—	—
225	25	250	290	465	680	57	45	34	24	26	1 100	330	55	75	34	50	8	M27	30	335	325	—	—	—	—
250	28	335	320	510	750	66	50	36	26	28	1 200	360	60	90	36	55	8	M27	30	370	350	60	170	40	80
300	40	510	380	590	900	78	55	40	29	32	1 450	430	60	105	40	65	8	M33	36	450	420	70	195	40	105
350	55	645	440	665	1 000	90	60	42	31	35	1 650	500	65	130	42	75	10	M33	36	500	250	80	210	40	120
400	65	820	500	735	1 100	102	65	46	33	40	1 850	560	65	155	46	85	10	M36	39	570	275	90	230	45	140
450	90	1 115	560	790	1 200	114	70	49	34	45	2 050	630	70	180	49	95	10	M39	42	650	285	100	250	45	160
500	115	1 365	620	840	1 300	126	80	50	35	50	2 250	700	70	205	50	105	12	M39	42	720	305	100	265	45	180
560	140	1 720	690	880	1 400	138	90	50	35	55	2 400	770	75	230	50	120	12	M	48	775	320	110	280	50	200
630	220	2 060	770	955	1 600	150	100	50	35	60	2 750	900	75	255	50	130	14	M46	52	835	270	110	290	50	220
700	260	2 470	850	1 000	1 700	162	110	50	35	65	2 900	970	80	280	50	140	14	M52	56	895	280	110	300	50	240

*F is the maximum admissible breaking load of the corresponding rope.

TABLE 2 DIMENSIONS FOR CAST STEEL BOLLARDS

(Clauses 4.1, 5.4, and Fig. 1 and 2)

All dimensions in millimetres.

NOMI- NAL DIA D	*F tonnes	CALCU- LATED WEIGHT (WITH LUGS) (kg)	BARREL								BASE						FIXING ARRANGEMENT					LUG			
			D ₁	H ₁	L ₁	H ₂	r ₁ Min	t ₁	t ₂	r ₂ Min	L ₂	B ₁	t ₃	r ₂ Min	t ₄	B ₂	No. of Bolts	Bolt Dia	Hole Dia	P ₁	P ₂	L ₃	H ₃	t ₅	r ₄ Min
150	12.0	—	200	330	500	38	30	20	16	20	800	230	40	60	30	30	6	M22	24	270	180	—	—	—	—
200	20	—	260	420	600	52	40	22	16	24	1 100	300	50	75	32	32	8	M24	26	330	240	—	—	—	—
250	28	220	320	510	750	66	50	24	18	28	1 400	360	60	90	34	34	8	M27	30	370	350	60	170	20	80
300	40	340	380	590	900	78	55	26	20	32	1 700	430	60	105	36	37	8	M33	36	450	420	70	195	25	105
350	55	430	440	665	1 000	90	60	28	22	35	1 900	500	65	130	40	40	10	M33	36	500	250	80	210	25	120
400	65	552	500	735	1 100	102	65	31	23	40	2 100	560	65	155	42	44	10	M36	39	570	275	90	230	30	140
450	90	750	560	790	1 200	114	70	33	25	45	2 350	630	70	180	44	47	10	M39	42	650	285	100	250	30	160
500	115	955	620	840	1 300	126	80	35	27	50	2 550	700	70	205	47	50	12	M39	42	720	305	100	265	35	180
560	140	1 310	690	880	1 400	138	90	38	29	55	2 800	770	75	230	50	54	12	M45	48	775	320	110	280	35	200
630	220	1 650	770	955	1 600	150	100	40	30	60	3 000	900	75	255	53	58	14	M48	52	835	270	110	290	40	220
700	260	2 080	850	1 000	1 700	160	110	42	32	65	3 200	970	80	280	55	62	14	M52	56	895	280	110	300	40	240

F is the maximum admissible breaking load of the corresponding rope.

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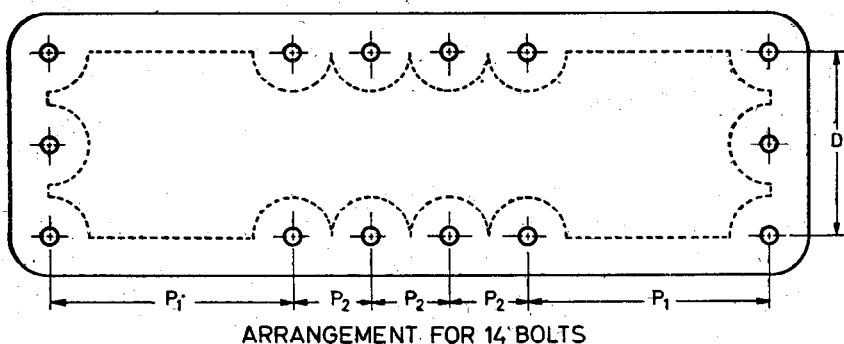
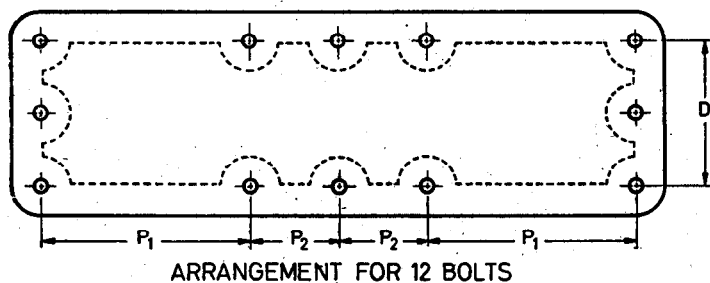
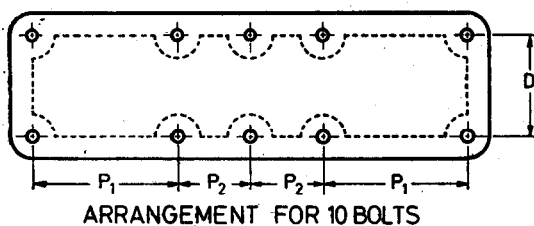
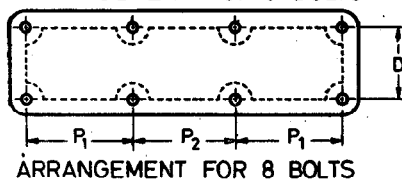
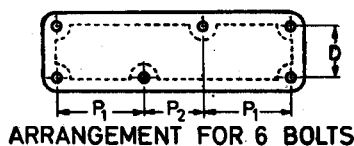


FIG. 2 ARRANGEMENT OF BOLTS FOR DIFFERENT SIZES OF BASE PLATE

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